

SOLDIER ADDITION PROJECT

Introduction and Background

The purpose of this project and the details of the proposed activities discussed further in this document are based upon findings from a watershed level assessment completed in 2000. This assessment (Spotted Bear-Kah Ecosystem Analysis at the Watershed Scale, or EAWS) covered about 185,000 acres on the northernmost portion of the Spotted Bear Ranger District. This assessment made no decisions, it was conducted to better understand and document the historical and human uses that have been occurring in this large drainage and to evaluate the current conditions and uses. This information, along with the goals and objectives of the Flathead Land and Resource Management Plan (Forest Plan), was used to recommend possible or desirable future conditions for this watershed.

Several site-specific projects over the last decade have been completed within this large assessment area and have used information from the EAWS. These projects include the Spotted Beetle Resource Management Project, the Spotted Bear River Trailhead Project, and the Spotted Bear Vista Project.

The Soldier Addition Project is using information from the EAWS as well as responding to goals and objectives of the Forest Plan to guide its purposes and proposed activities. The Forest Plan uses management areas (MA) to guide management of National Forest System lands within the Flathead National Forest. The Forest has been divided into twenty-two MAs, each with different management goals, and resource potential and limitations. Several MAs found within the vicinity of the Soldier Addition project area are providing the guidance for the project or its purpose. Management areas include those related to timber productivity, Wild and Scenic Rivers, and timberlands with high scenic values. These and other affected MAs with their emphases will be described later in this document.

Location of the Project

The project area encompasses National Forest System lands on the Spotted Bear Ranger District that are bounded to the east by the Hungry Horse Reservoir and the South Fork Flathead River, to the north by Clark Creek, to the south by Bunker Creek, and to the west by Bruce Ridge. The project area is about 48,000 acres in size.

Purpose and Need of the Project

Based on Forest Plan guidance and information from the Spotted Bear-Kah EAWS, the Soldier Addition Project has the following purposes:

- Maintaining or improving timber productivity and forest resilience and health.
- Restoring the role of fire in the ecosystem.
- Maintaining the viability and function of whitebark pine.
- Maintaining and improving recreational values and the safety of our visitors at developed recreation sites and other areas within the Wild and Scenic River corridor.
- Protecting an electronic site from damage due to future wildland fires.

Timber Productivity and Forest Resilience/Health

Several of the Forest Plan management areas located within the project area have management objectives associated with cost-efficient production of timber while protecting the productive capacity of the land and timber resource (MAs 7, 15, and 16). The desired forest condition is one where most trees are healthy, able to grow at or near their highest potential, and are composed of a mix of native tree species. These conditions also increase the resiliency of the stand and forest – its ability to withstand and maintain normal function in the face of inevitable future disturbances, such as insect or disease infestation, or climatic changes.

To achieve the desired condition, the project would be designed to:

- Proactively treat mature lodgepole pine-dominated stands to reduce potential mountain pine beetle infestation and mortality.
- Salvage current and potential economic value of lodgepole pine that would likely be lost to pine beetle infestations if left untreated.
- Maintain or improve timber productivity on suitable lands.
- Provide a variety of wood products to the local economy.
- Provide opportunity for release and growth of trees in the young, sapling-sized stands.

Forest stands at maturity (at their maximum mean annual growth) and young, sapling stands are both targeted for treatment to address this purpose and need. The majority of mature stands targeted for treatment are dominated by 75+ year old lodgepole pine. They are in the age and size class and at the elevation and latitude that render them highly susceptible to mountain pine beetle infestation. Under the right climatic and stand conditions, this beetle is capable of building up to very high population levels, and causing high mortality of lodgepole pine (and other pine species) within stands and across landscapes. Within the Soldier Addition Project Area, the oldest lodgepole pine stands (around 120 years old) have already experienced very high mortality over the past decade. The 75-95 year old stands have now reached the age and size where they too are at high risk to mountain pine beetle infestation. The beetle is already causing mortality within some of these stands. In addition to these lodgepole pine-dominated stands, some mature stands of 120-140-year-old Douglas-fir, western larch, and sometimes Engelmann spruce, are targeted for treatment. Some of these stands have already lost most of the lodgepole pine due to recent beetle mortality.

These mature stands would be largely treated with a regeneration harvest (seedtree or shelterwood cut), which would improve timber productivity and stand vigor by replacing the mature trees with a new stand of young, vigorous seedlings, either through natural regeneration or by planting. In the lodgepole pine-dominated stands, removal of dead/dying lodgepole pine and live mature lodgepole before the pine beetle causes them to die (and thus decrease substantially in value) could provide a benefit for a society that relies on wood products.

The project area contains many stands where young sapling trees are the dominant component; these originated from timber harvest activities over the past five decades. Tree growth is affected in some of these stands due to the high density of trees. Thinning these stands at this early stage in their development can result in very high gains in tree growth (and thus future tree size), as well as influence species compositions to favor the more desirable species. In addition, genetically improved western white pine seedlings resistant to blister rust (an introduced disease) were planted

in many of these stands over the past 30 years. Thinning to allow full growth potential on these trees is important to fully benefit from the investment into this program.

The Role of Fire in the Ecosystem

The desired condition across the landscape is to maintain healthy, functioning ecological systems, with vegetation conditions that are close to what might occur under natural disturbance regimes. Fire is a major disturbance factor that has historically influenced the forests in the Soldier Addition Project area. Naturally ignited fire cannot always be allowed to burn indiscriminately within the project area because of the risk of detrimental effects on other resource values, such as human developments and lands managed for the production of wood products. Prescribed fire can be used as a tool to achieve the desired conditions, by allowing burning under more controlled conditions that limit the spread and effect of fire.

To achieve the desired condition, this project would be designed to:

- Create/maintain vegetation conditions similar to those under natural disturbance regimes by reintroducing fire into the ecosystem.
- Lower the risk of severe and intense wildfire (crown fire) on sites that historically experienced lower severity fire.

There are areas within the Soldier Addition Project area where drier forest conditions predominate, usually dominated by Douglas-fir, and often interspersed with dry meadows or shrub fields. These areas have historically experienced more frequent fires than the surrounding cool, moist forest types. Due to fire suppression efforts, it is likely that one or more fire events have been prevented from occurring on these sites in the last century, and vegetation conditions have been altered as a result. More continuous, dense forest cover currently exists, with a higher risk of more severe, stand-replacing fires than what would have occurred historically. Prescribed fire can be used to reduce tree density and ladder fuels, and lower the amount of surface and ground fuels. This would begin the process of restoring more resilient, healthy functioning vegetative conditions.

Whitebark Pine Viability

White pine blister rust – an exotic, introduced disease – along with mountain pine beetle in some areas, has decimated whitebark pine populations across the region over the past several decades, killing the majority of the trees in many areas. Stands dominated by subalpine fir and Engelmann spruce have become predominant in the higher elevations, with coverage and density of this forest type increasing over time. The desired condition is for healthy individuals and stands of whitebark pine to exist on suitable sites within the project area, providing values associated with watershed protection and wildlife habitat.

To achieve this long-term desired condition, the project would be designed to:

- Create conditions that favor the establishment, growth, and competitive advantage to whitebark pine, through prescribed burning and planting of rust-resistant seedlings where appropriate.

Whitebark pine was historically a common species in the higher elevation forests of the Soldier Addition Project Area. A moderate to relatively high-intensity, stand-replacement fire would be applied to areas currently dominated by subalpine fir or spruce, where the whitebark pine component has experienced high mortality. Prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration (either natural or through planting) and growth.

Recreational Values and Safety

This project would promote recreation values and enhance the safety of visitors to areas within the Wild and Scenic River corridor, and to Meadow Creek and Gorge Creek Trailheads by:

- Applying thinning and small-scale stand replacement treatments to the mature lodgepole pine forests that occur in these areas.

This mature lodgepole pine, as discussed earlier, is at high risk of mountain pine beetle infestation and mortality. Past experience and evidence from the surrounding areas lead to the conclusion that beetles will eventually infest these stands, causing varying amounts of mortality. At the Meadow Creek Trailhead, beetle activity over the past several years has already killed many trees. Dead trees in areas heavily used by recreationists are not only of concern from a safety standpoint, but in abundance they can be seen as unsightly, or limit the use of the areas for such activities as hiking. Treatments in these areas of high recreational values would be designed to help stabilize the stands in the short term (lower the potential of beetle attack) by thinning to reduce tree density and in the long term by promoting the establishment and growth of a younger age class of trees. This longer-term objective would be met by removing lodgepole pine overstory trees in areas where understory Douglas-fir, subalpine fir, western larch, or Engelmann spruce exist; or by creating small openings (< ½ acre in size) in portions of the stands to encourage new regeneration of conifers. These treatments are designed to lessen the visual impacts of harvesting, retaining a more fully forested appearance, while addressing the concerns of existing and potential tree mortality.

Stony Hill Electronic Site

The Stony Hill Electronic Site provides radio, phone, computer, and fax communications to the Spotted Bear Ranger Station and the surrounding backcountry. These communications are vital for the day-to-day management of the ranger district. The facilities at the site include a building and an exterior antennae tower.

The forested areas adjacent to the electronic site are composed of dense patches of subalpine fir and spruce trees of various sizes, mostly less than 30 feet tall. In the event of a future fire, this vegetation could burn at an intensity that would threaten the values associated with the electronic site. To protect the site, this project would allow for:

- Thinning, followed by hand piling and burning within about 300 feet of the electronic site.

The Proposed Action

The Soldier Addition Proposed Action is designed to satisfy the purpose and need for action as described above. It encompasses approximately 4,634 acres of NFS lands. Harvesting of mature trees or hand thinning of smaller trees would occur on approximately 2,542 acres. Prescribed burning would be applied to treat approximately 2,092 acres (Tables 1 and 2).

Proposed treatments would occur on lands designated as Forest Plan Management Areas (MA) 2B, 4, 7, 11A, 13A, 15, 16, and 18. The proposed activities would be consistent with the Forest Plan direction for these management areas. Each MA is briefly described below.

MA 2B: Unroaded lands suited for dispersed recreation that meets the ROS classification of semi-primitive motorized. Dispersed recreation opportunities will be managed to meet the semi-primitive motorized ROS classification.

- All or portions of burn Units 1, 2, 3, 4 and 5, and the Stony Hill Electronic Site are all within MA 2B.

MA 4: Includes all campgrounds, picnic areas, boat launches, and other developed recreation sites excluding Big Mountain. Provide for developed recreation opportunities with management to the full-service level of existing developed facilities. Timber harvest will not be scheduled, hazard trees will be removed, and timber stand improvement and reforestation will be done only to improve recreation or visual opportunities.

- The Meadow Creek and Gorge Creek Trailhead (Units 48 and 56) are designated MA 4.

MA 7: Timberlands in areas of high scenic value. Manage the timber resource with roads in a manner that compliments and protects high scenic values. Maintain or create natural-appearing, diverse patterns of vegetation using various silvicultural systems. Designated as suitable for timber management and timber harvest will be scheduled.

- Timber harvest Units 11 through 16, 18, and 19 are within MA 7.
- Tree sapling thin units in MA 7 include portions of Units A and C.

MA 11A: Timber and non-forest lands capable of providing grizzly bear habitat located in the Bunker Creek area on the Spotted Bear Ranger District. Maintain and enhance grizzly bear habitat by implementing appropriate management and investment activities and controlling public access.

- A portion of burn Unit 7 is within MA 11A.

MA 13A: Non-forest lands capable of providing mule deer and elk winter habitat. Provide the size, age, diversity, and distribution of habitat units (both cover and forage) suitable for mule deer and elk winter habitat. Management of other resources will generally be compatible with the mule deer and elk winter habitat management goals. Timber harvest can be used to improve or maintain the relationships of cover to forage. Prescribed burning is also an acceptable habitat improvement method.

- A portion of burn Unit 7 is included in MA 13A.

MA 15: Timberlands where timber management with roads is economical and feasible. A major goal is to emphasize cost-efficient production of timber while protecting the productive capacity of the land and timber resource.

- Timber harvest Units 1 through 10, 20, 21, 23 through 47, and 49 through 55 are within MA 15.
- Tree sapling thinning units in MA 15 include all or portions of Units A through M, and Units P through V.
- A portion of burn Units 6 and 7 are within MA 15.

MA 16: Timberlands where timber management is feasible using aerial logging systems. The lands are generally steep breaklands where roading may be economically prohibitive or environmentally unsound. A major goal is to emphasize cost-efficient production of timber while protecting the productive capacity of the land and timber resource. Roadless logging methods will be used, unless site-specific analysis determines that a roaded system is economically and environmentally prudent.

- A portion of timber harvest Unit 28 is within MA 16.
- Portions of burn Units 2, 3, and 6 are within MA 16.

MA 18: National Forest System lands designated for wild, scenic, and recreation river management under the Wild and Scenic Rivers Act. Manage each segment of the Flathead Wild and Scenic River Unit in a manner consistent with the classification assigned to it. Maintain the scenic, ecological, and recreation integrity of the resource through responsible management. Emphasize visitor contact and education.

- Timber harvest units in MA 18 include Units 17 and 22.
- Tree sapling thin units in MA 18 include Units N and O.

The following table provides a summary of the components within this Proposed Action, and a description of the proposed activities follows Table 1. Table 2 follows the description of the proposed activities and displays Proposed Action components by unit.

Table 1. Summary of Treatments Included in the Proposed Action

Treatment	Approximate Acres
Tree harvest in mature forest stands (75 - 120 years old)	1,245
Tree thinning in young sapling forests (20 - 40 years old)	1,292
Prescribed burning	2,092
Hazardous fuel reduction by hand	5

Tree Harvest in Mature Forests

Tree harvest is proposed across approximately 1,245 acres of National Forest System lands, in about 56 separate harvest units. These units are identified as Units 1 through 56 on the enclosed map. Proposed timber harvesting would take place on land designated as Forest Plan Management Areas 4, 7, 15, 16 and 18, and would be consistent with the Forest Plan direction for these MAs, as described above.

Most of the proposed harvesting (about 80% of the acres) would occur within stands where mature lodgepole pine occurs. The remaining stands are also mature, but species other than lodgepole pine comprise a major part of the stand (mainly Douglas-fir and western larch).

Most proposed units (932 acres) would be treated with a seedtree or shelterwood harvest. These are regeneration treatments designed to create forest conditions conducive to the regeneration of a new stand of desired conifer species. A seedtree typically would leave from 8 to 15 overstory trees per acre; a shelterwood would leave up to 30 trees per acre. In both cases, western larch and Douglas-fir would be the favored leave tree species; lodgepole pine may be left in some units where larch and Douglas-fir are lacking. Leave trees would not only provide seed for natural regeneration and shelter to the new stand, but would also provide for improved structural diversity in the young forest. Planting of conifer seedlings would occur on up to 513 acres of harvested areas, where inadequate natural regeneration is expected, or where a greater diversity of species is desired.

The remaining 313 acres would be harvested with a thinning and/or group selection treatment. These harvest types would occur mostly in MA 4 (developed recreation sites) and in MA 18 (Wild and Scenic River) in mature stands of lodgepole pine. Across most of these units, from ¼ to ½ of the tree stems would be removed in a thinning to create better growing conditions for the remaining trees and help to reduce mortality from pine beetle. In other portions of these units, small (< ½ acre) openings would be created in order to create conditions suitable for the release of existing or establishment of new, young sapling trees.

No new permanent roads would be constructed to conduct harvest activities in this project. Some temporary roads may be built or historic roads utilized in order to access units. Temporary and historic roads would be rehabilitated following project treatments.

The majority (about 762 acres) of proposed units have slopes and terrain suitable for harvest with a ground-based mechanized system, such as a rubber-tired skidder. About 214 acres of proposed harvest are on steeper slopes and would be harvested with a skyline system. The remaining 269 acres are in areas deemed inaccessible with existing or temporary road systems, and are proposed for helicopter logging.

No treatments within riparian areas or grizzly bear security core would occur. Additionally, no old growth is targeted for treatment.

Trees removed would provide a commercial product. Sale of these commercial products would be pursued to increase the economic efficiency of the project and reduce costs to taxpayers.

Tree Thinning in Young Sapling Forests

Up to 1,292 acres, in about 22 separate units, of young sapling forest would be thinned under this proposal. These units are identified as Units A through V on the attached map. This proposed thinning would occur within Forest Plan MA 7 and 15. Thinning would typically reduce tree density from the current 1,000+ trees per acre, down to 250 to 450 trees per acre. These stands were harvested and regenerated between 1962 and 1993 and are now densely stocked with sapling trees, these trees are mostly 15 to 25 feet tall, but are up to 35 feet tall in the older units. Western larch, lodgepole pine, Douglas-fir, and western white pine are the most common species and would be

avored as leave trees. Thinning is proposed to increase the light and moisture available to the remaining trees, improving their growth and vigor in the short and long term. Planting of blister rust resistant western white pine occurred in many of the units (estimated 760 acres), and the release of these genetically improved trees is a primary reason for thinning. All thinning would be done by hand (chainsaw). Cut sapling trees would be left on site and would decompose relatively quickly.

Prescribed Burning

Application of fire to the landscape would occur in seven separate units, with about 2,092 acres targeted for treatment. These units are identified as Burn 1 through Burn 7 on the attached map. Four of these units, a total of about 822 acres, are in higher elevation habitats where whitebark pine has historically existed, but is now severely reduced in numbers due to the impacts of blister rust (an introduced disease) and mountain pine beetle. These units are now dominated by subalpine fir and Engelmann spruce. Fire would be applied at an intensity that would cause high mortality of this component, creating open stand conditions more favorable to the regeneration and successful growth of whitebark pine. Up to 100 acres of the burned area would be planted with rust-resistant whitebark pine seedlings to accelerate the restoration of this species across the landscape.

The remaining three prescribed burn units (about 1,270 acres) are in mid to lower elevation habitats characterized by a mosaic of forested areas, interspersed with small areas of open meadow or shrub fields. Forested patches are dominated by Douglas-fir, with variable amounts of larch, ponderosa pine, and lodgepole pine. Fire would be applied at a lower intensity in these units, resulting mostly in an underburn of the forested areas. This would result in mortality of some of the smaller or more fire-sensitive species (such as lodgepole pine), while minimally impacting the larger diameter, more fire-tolerant overstory trees including Douglas-fir, western larch, and ponderosa pine. Up to 100 acres of the burned areas would be planted to ponderosa pine seedlings to promote establishment of this desirable species where natural seed sources are lacking.

Hazardous Fuel Reduction

Treatment of about 5 acres of dense forest in the immediate vicinity of the Stony Hill Electronic Site is proposed to reduce the risk of damage to this site in the event of a future wildfire. Trees would be cut by hand, with slash hand-piled and the piles burned if necessary to reduce fire risk. Trees are of all sizes, but most are less than 30 feet tall. Trees cut would be subalpine fir and Engelmann spruce. No whitebark pine would be cut.

Table 2. Proposed Action

Unit Number	Acres Treated	Prescription	Major Species
Mature Stand Treatments			
1	24	Seedtree	Lodgepole pine/western larch/Douglas-fir
2	36	Seedtree	Lodgepole pine
3	12	Seedtree	Lodgepole pine/western larch
4	6	Seedtree	Lodgepole pine
5	19	Seedtree	Lodgepole pine
6	4	Seedtree	Lodgepole pine
7	14	Seedtree	Lodgepole pine
8	22	Seedtree	Lodgepole pine
9	16	Seedtree	Lodgepole pine
10	20	Seedtree	Lodgepole pine
11	6	Thinning	Western larch
12	150	Thinning	Lodgepole pine/western larch/Douglas-fir
13	32	Shelterwood	Lodgepole pine/western larch/Douglas-fir
14	29	Shelterwood	Lodgepole pine/western larch/Douglas-fir
15	21	Seedtree	Lodgepole pine
16	22	Thinning/Group Selection	Lodgepole pine
17	23	Thinning/Group Selection	Lodgepole pine
18	21	Seedtree	Lodgepole pine
19	9	Seedtree	Lodgepole pine
20	37	Seedtree	Lodgepole pine
21	20	Seedtree	Lodgepole pine
22	47	Thinning/Group Selection	Lodgepole pine
23	9	Seedtree	Lodgepole pine
24	6	Seedtree	Lodgepole pine
25	15	Seedtree	Lodgepole pine
26	15	Seedtree	Lodgepole pine
27	24	Seedtree	Lodgepole pine
28	93	Shelterwood	Douglas-fir
29	10	Seedtree	Lodgepole pine
30	11	Seedtree	Douglas-fir
31	15	Seedtree	Douglas-fir
32	21	Seedtree	Western larch/lodgepole pine
33	16	Seedtree	Western larch/lodgepole pine
34	17	Seedtree	Douglas-fir
35	12	Seedtree	Western larch/Douglas-fir
36	13	Seedtree	Western larch/Douglas-fir
37	19	Seedtree	Western larch/Douglas-fir
38	22	Seedtree	Western larch/Douglas-fir

Unit Number	Acres Treated	Prescription	Major Species
39	15	Seedtree	Western larch/lodgepole pine
40	11	Seedtree	Western larch/lodgepole pine
41	5	Seedtree	Douglas-fir
42	11	Seedtree	Douglas-fir
43	25	Seedtree	Western larch/Douglas-fir
44	27	Seedtree	Lodgepole pine
45	17	Seedtree	Western larch/Douglas-fir
46	20	Seedtree	Douglas-fir/lodgepole pine
47	7	Seedtree	Western larch/lodgepole pine
48	31	Thinning/Group Selection	Lodgepole pine
49	23	Seedtree	Lodgepole pine
50	14	Seedtree	Lodgepole pine
51	33	Seedtree	Lodgepole pine
52	28	Seedtree	Lodgepole pine
53	13	Seedtree	Lodgepole pine
54	15	Seedtree	Lodgepole pine
55	35	Seedtree	Lodgepole pine
56	6	Thinning	Lodgepole pine
Sapling Stand Treatments			
A	253	Thinning	Mixed, with western white pine
B	125	Thinning	Mixed, with western white pine
C	202	Thinning	Mixed, with western white pine
D	5	Thinning	Mixed, with western white pine
E	7	Thinning	Mixed, with western white pine
F	23	Thinning	Mixed larch, lodgepole, Douglas-fir
G	13	Thinning	Mixed, with western white pine
H	18	Thinning	Mixed, with western white pine
I	22	Thinning	Mixed, with western white pine
J	51	Thinning	Mixed, with western white pine
K	17	Thinning	Mixed larch, lodgepole, Douglas-fir
L	30	Thinning	Mixed, with western white pine
M	35	Thinning	Mixed, with western white pine
N	39	Thinning	Lodgepole pine, Douglas-fir
O	40	Thinning	Lodgepole pine
P	16	Thinning	Lodgepole pine
Q	24	Thinning	Lodgepole pine
R	17	Thinning	Mixed lodgepole, larch, Douglas-fir
S	50	Thinning	Mixed larch, Douglas-fir, lodgepole pine
T	31	Thinning	Mixed larch, Douglas-fir, lodgepole pine
U	34	Thinning	Mixed larch, Douglas-fir, lodgepole pine
V	239	Thinning	Mixed larch, Douglas-fir, lodgepole pine

Unit Number	Acres Treated	Prescription	Major Species
Prescribed Burn Treatments			
Burn 1 – WBP¹	149	Prescribed Burn, moderate/high intensity	Subalpine fir, spruce
Burn 2 - WBP	136	Prescribed Burn, moderate/high intensity	Subalpine fir, spruce
Burn 3 – UB²	261	Prescribed Burn, low intensity	Douglas-fir
Burn 4 - WBP	153	Prescribed Burn, moderate/high intensity	Subalpine fir, spruce
Burn 5 - WBP	384	Prescribed Burn, moderate/high intensity	Subalpine fir, spruce
Burn 6 - UB	479	Prescribed Burn, low intensity	Douglas-fir, lodgepole pine, ponderosa pine
Burn 7 - UB	530	Prescribed Burn, low intensity	Douglas-fir, western larch, lodgepole pine
Hazardous Fuels Treatments			
Stony Hill Site	5	Thinning of small trees (mostly <30 ft tall)	Subalpine fir, spruce

¹Whitebark pine

²Underburn